Selecting quality initial random seed for metaheuristic pproaches: a case of timetabling problem

ABSTRACT

The Timetabling Problem is a combinatorial optimization problem. The University Course Timetabling Problems (UCTP) deals with the scheduling of the teaching program. Metaheuristic techniques have been very successful in a wide range of timetabling problem including UCTP. The performance of metaheuristic over UCTP is measured by quality timetable that is no violation of hard constraints and the lowest number of soft constraint violated. The stochastic natures of the metaheuristic approaches make it difficult to predict the quality of end result produced. Therefore the initial quality solutions are one of the important factors contributed to success of metaheuristic approaches in solving optimization problem particularly UCTP. This paper analyzes the effect of different random seed over metaheuristic performance. Techniques for selecting quality random seeding as an input for metaheuristic algorithm to solve university course timetabling are presented. The main objective is to obtain quality initial solution without much effort to construct difficult heuristic. The result obtained gives us opportunity to choose quality initial solution with less effort.

Keyword: Timetabling; Metaheuristic; Random Seeding